FIG. 1A

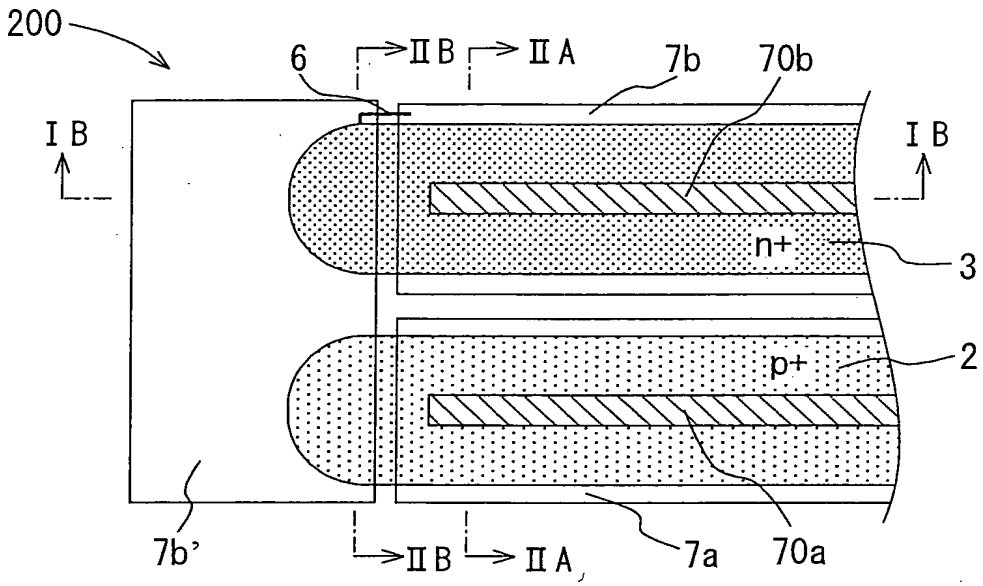

200
6
IIB
IIA
7b
70b
IB
IB
n+
3
p+
2
7b'
IIB
IIA
7a
70a

FIG. 1B

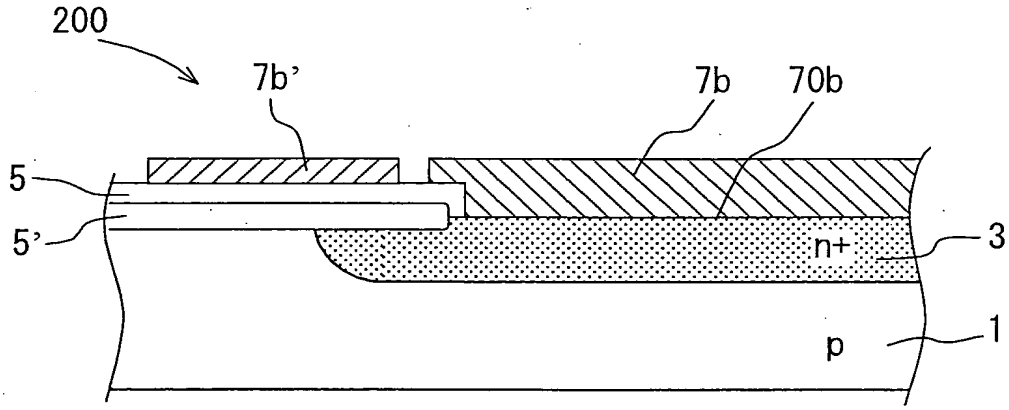

200
7b'
7b
70b
5
5'
n+
3
p
1

FIG. 2A

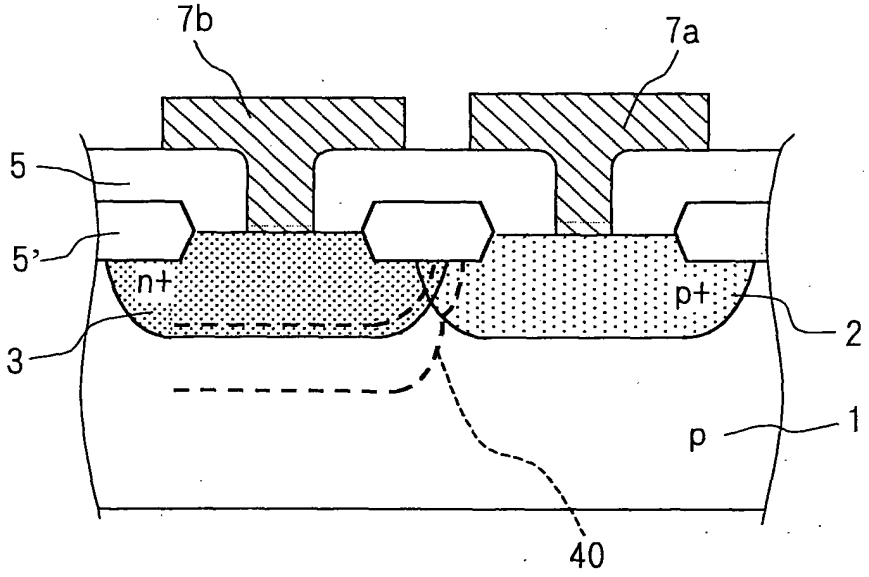


FIG. 2B

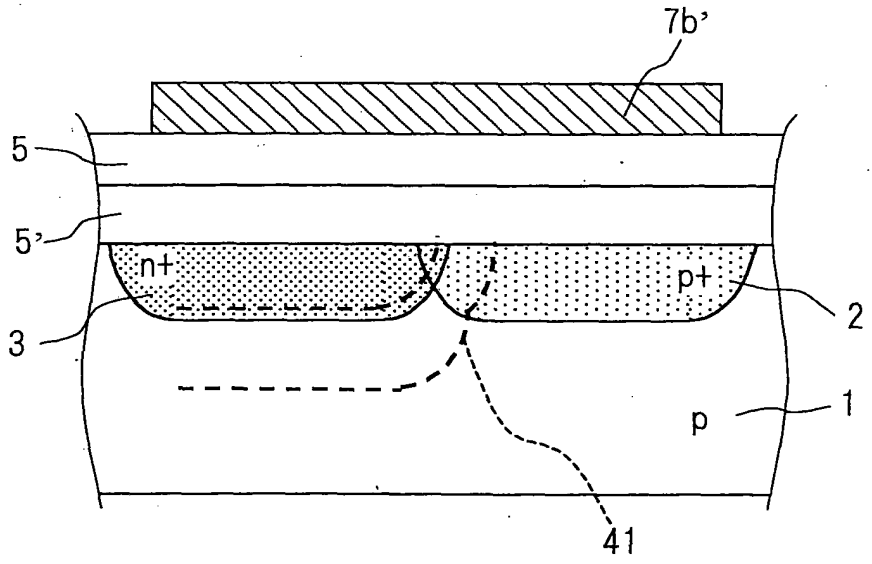


FIG. 3A

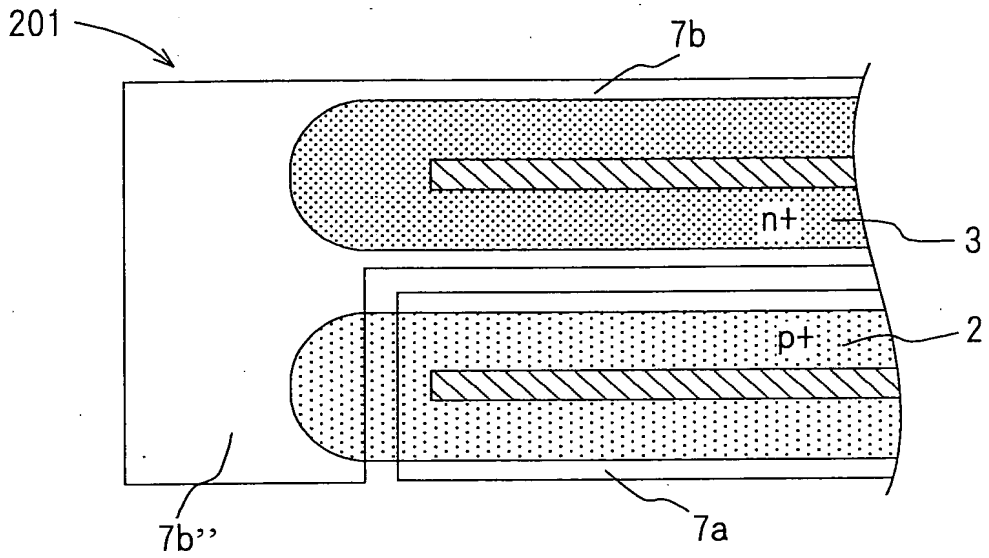


FIG. 3B

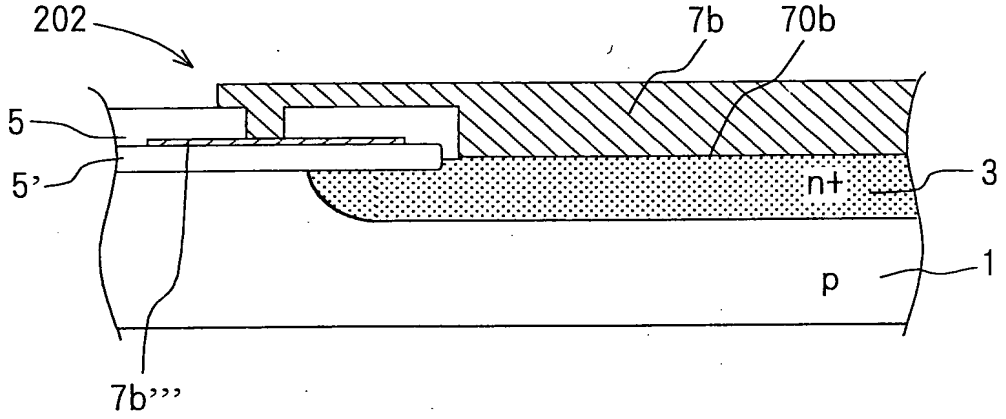


FIG. 4

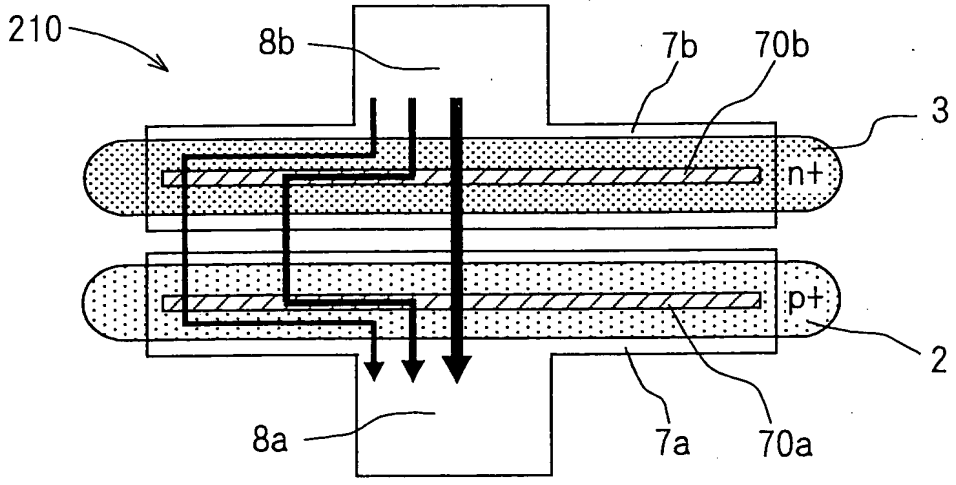


FIG. 5

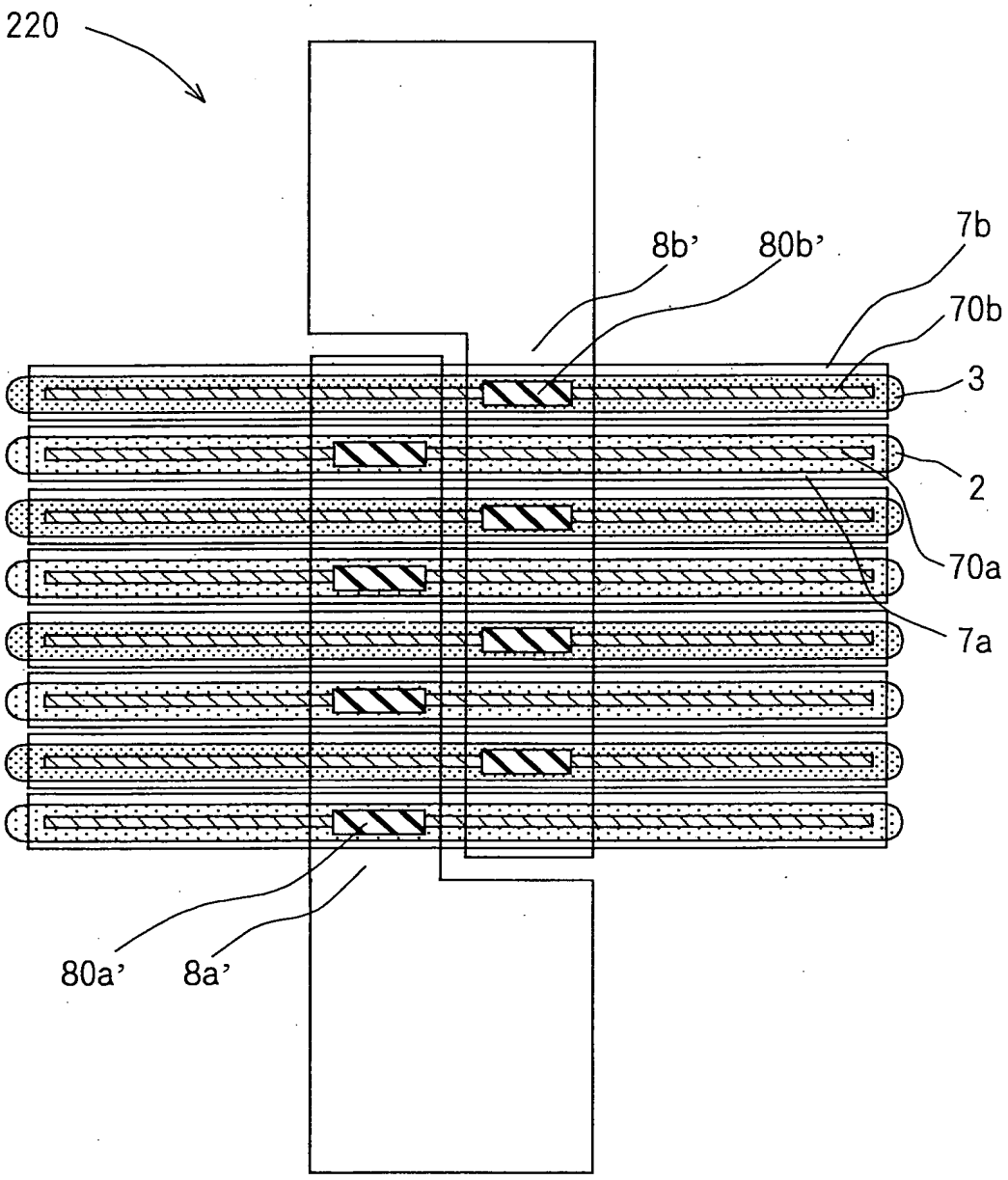


FIG. 6

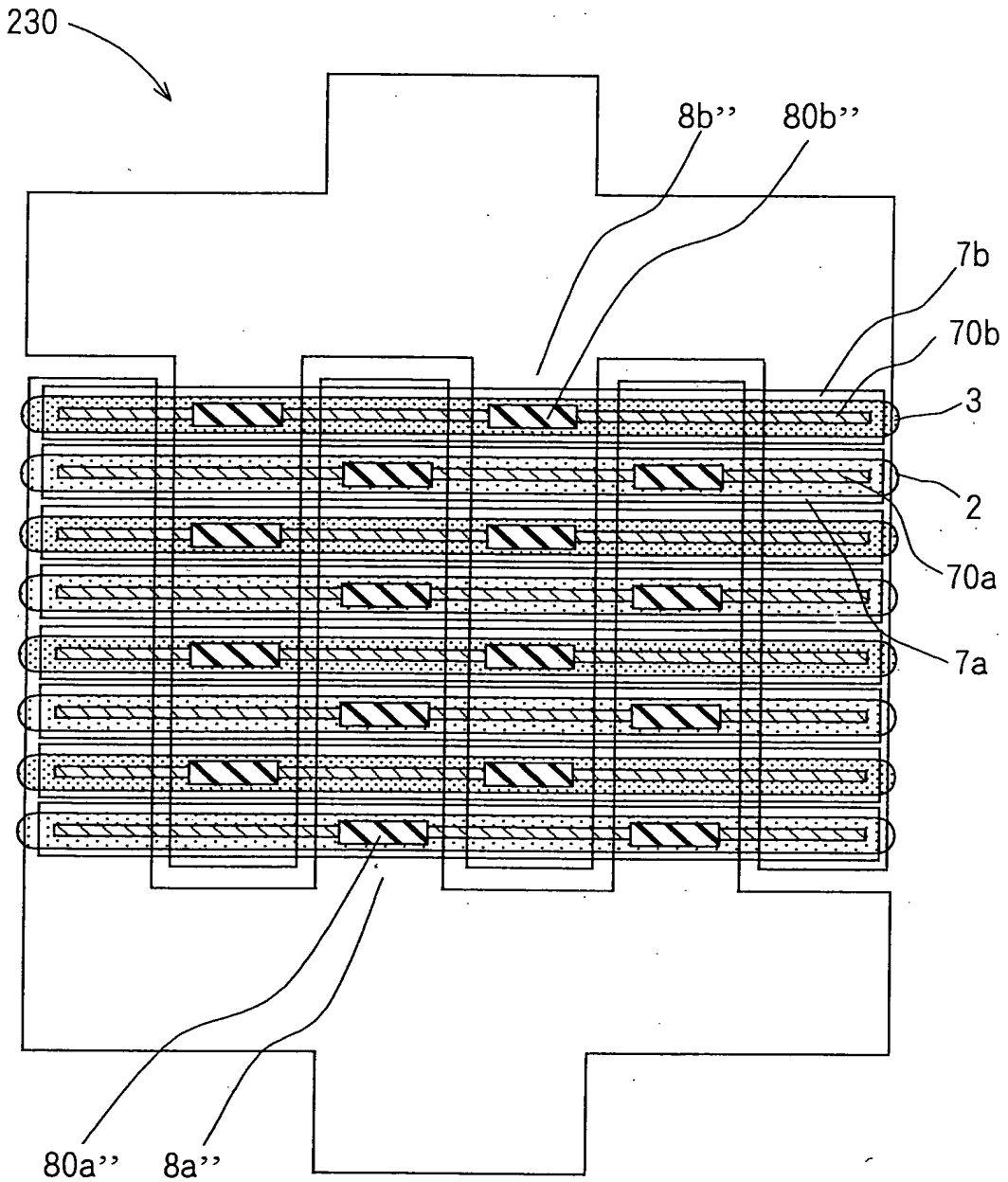


FIG. 7A

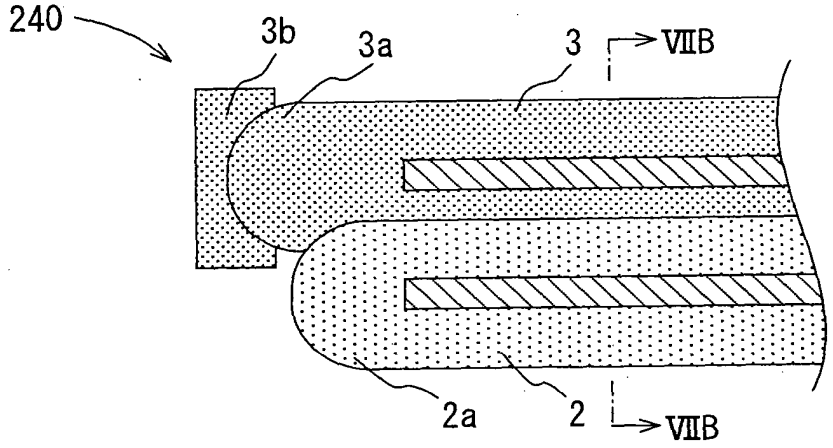


FIG. 7B

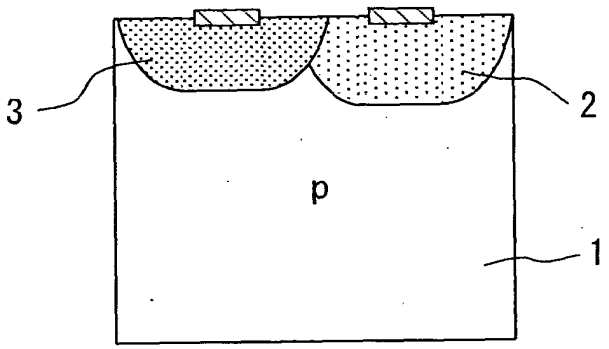


FIG. 8

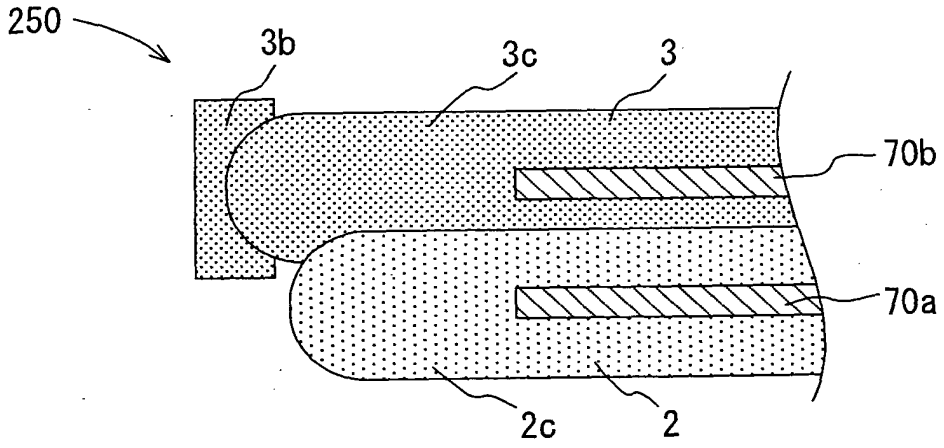


FIG. 9A

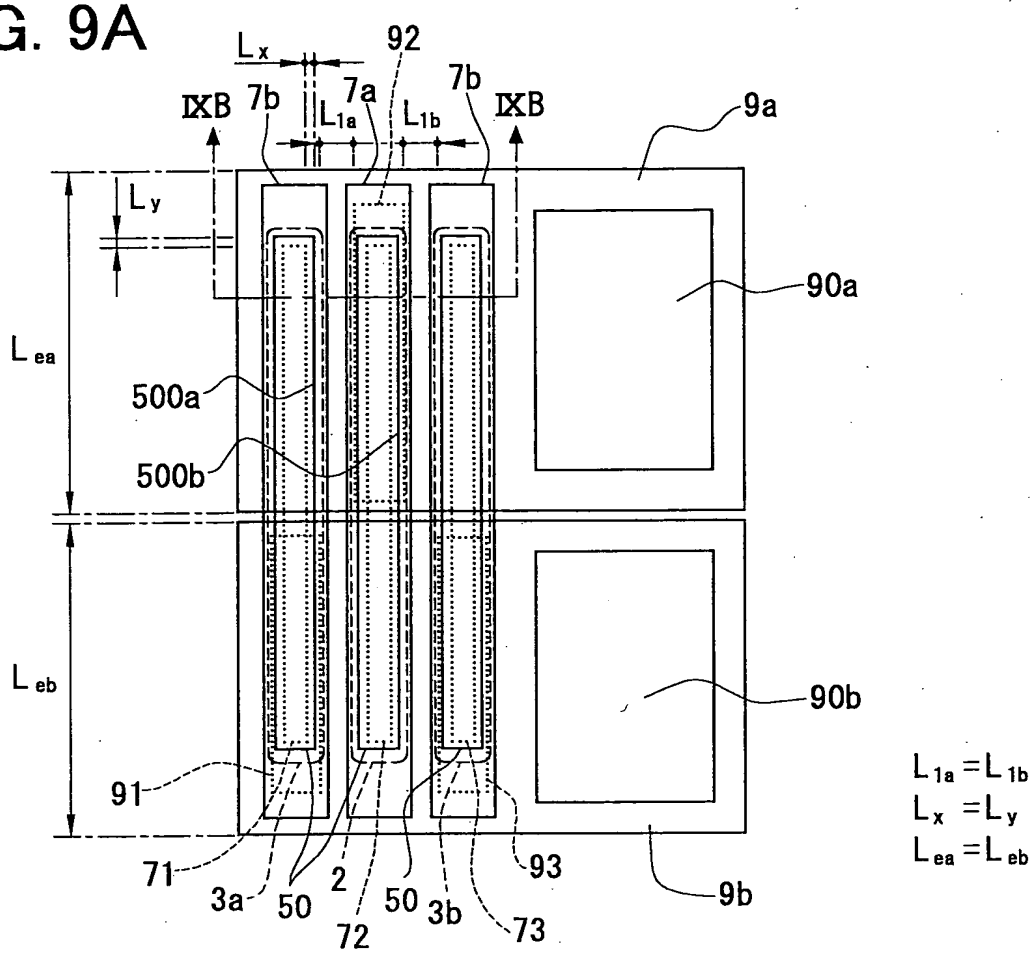

Lx
92
IXB
7b
7a
L1a
L1b
7b
IXB
9a
Ly
90a
Lea
500a
500b
Leb
90b
91
71
3a
50
2
72
50
3b
73
93
9b
L1a = L1b
Lx = Ly
Lea = Leb

FIG. 9B

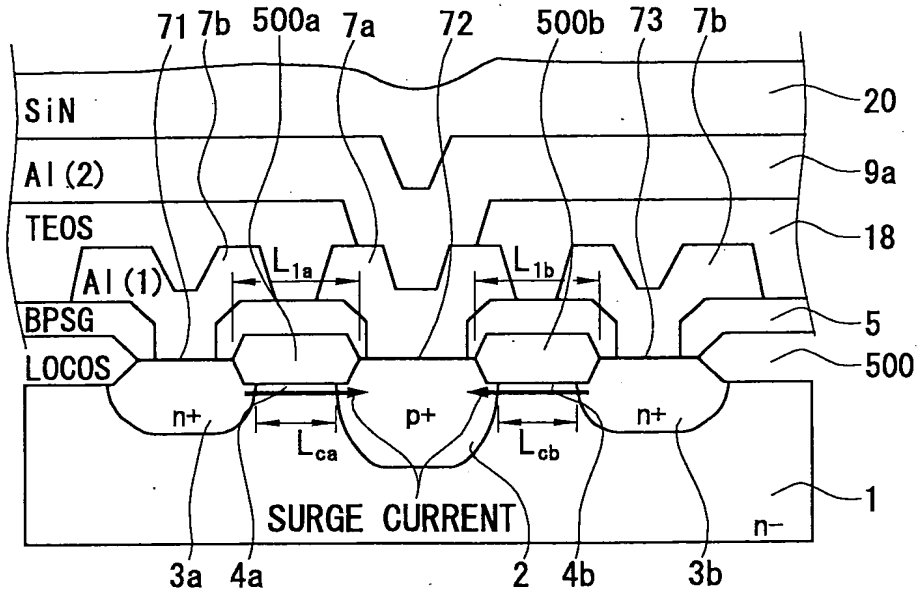

71
7b
500a
7a
72
500b
73
7b
SiN
20
Al(2)
9a
TEOS
18
Al(1)
L1a
L1b
BPSG
5
LOCOS
500
n+
p+
n+
Lca
Lcb
SURGE CURRENT
1
n−
3a
4a
2
4b
3b

FIG. 10A

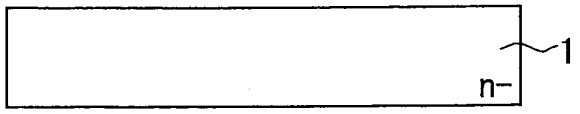


FIG. 10B

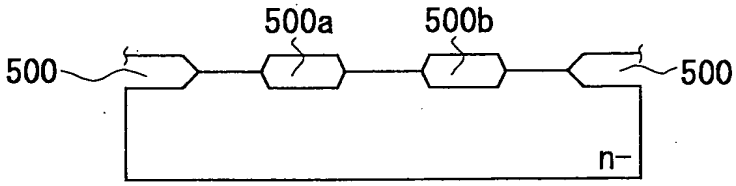


FIG. 10C

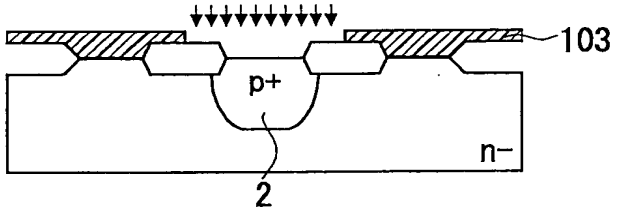


FIG. 10D

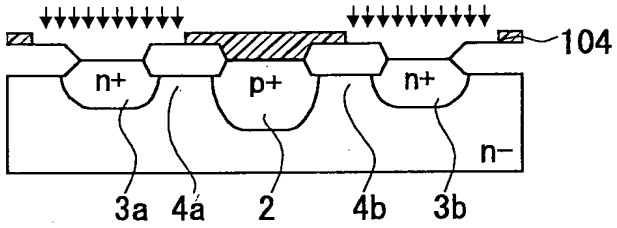


FIG. 10E

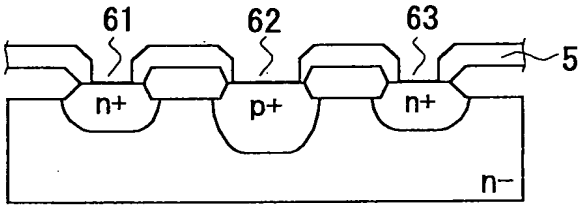


FIG. 10F

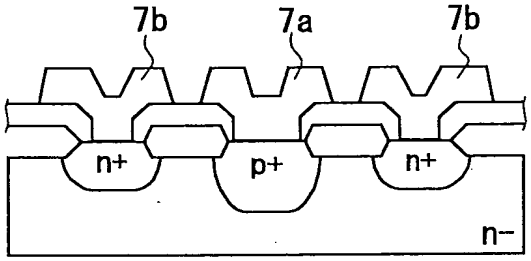


FIG. 10G

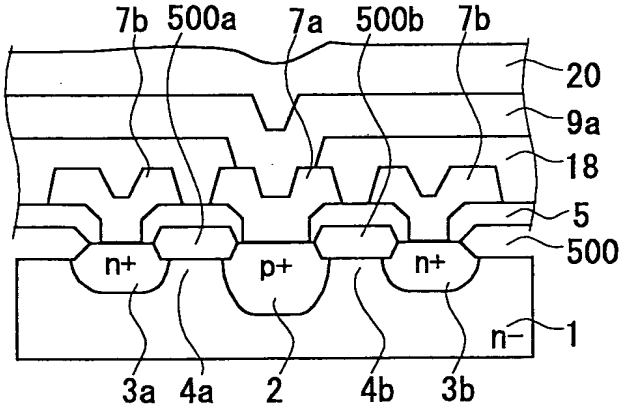


FIG. 11A

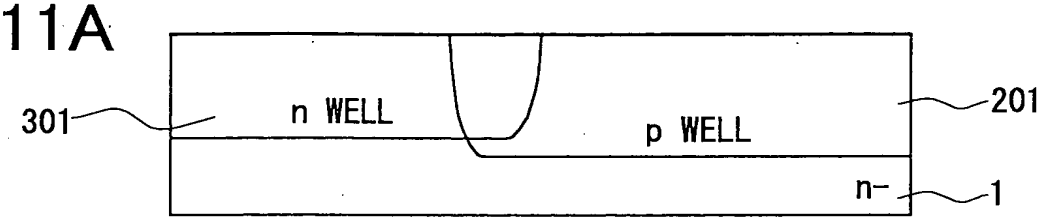


FIG. 11B

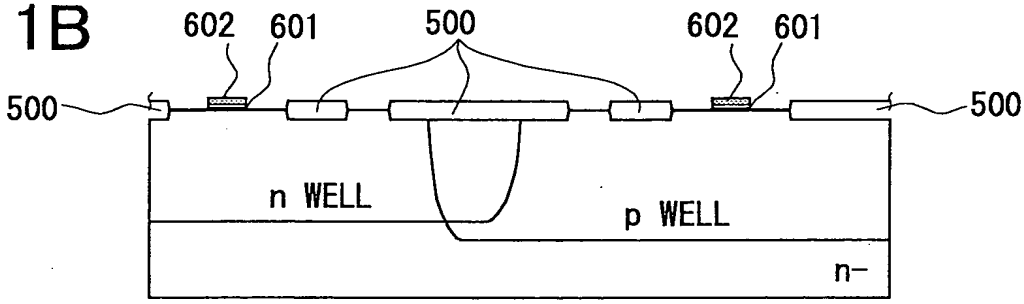


FIG. 11C

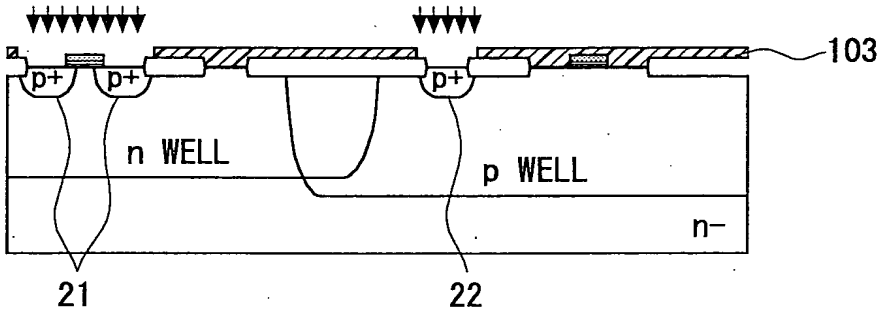


FIG. 11D

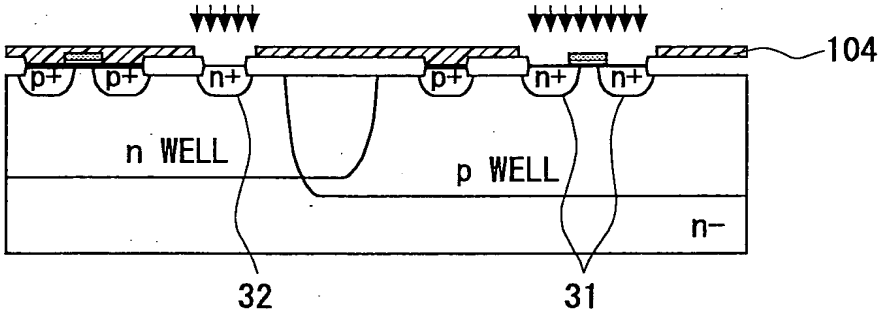


FIG. 11E

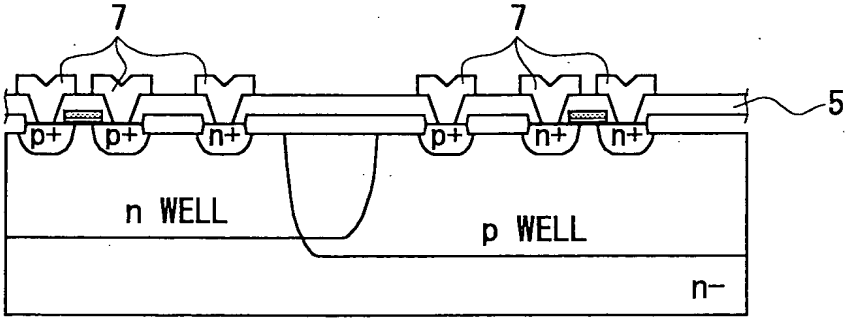


FIG. 12

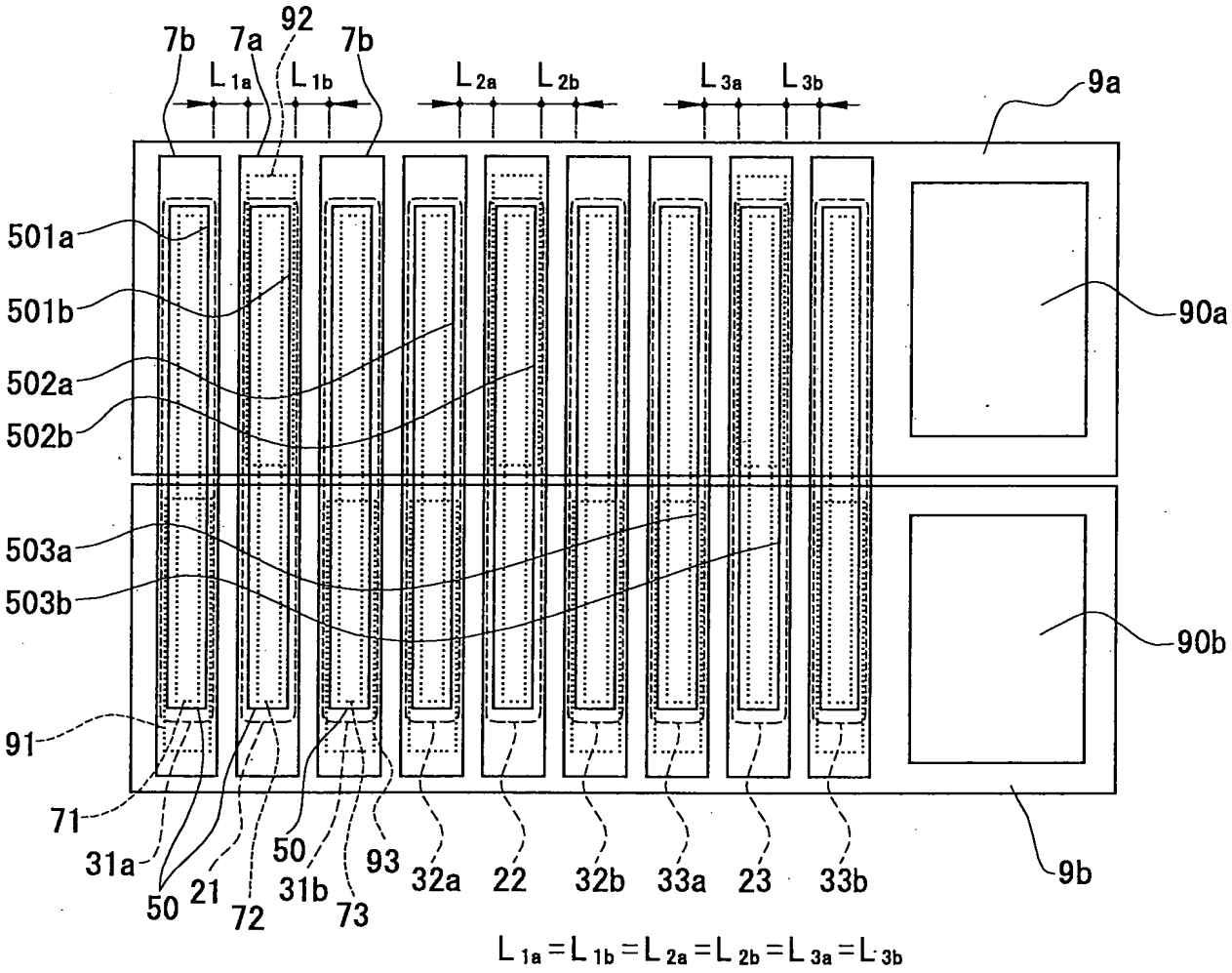

7b
7a
92
7b
L1a
L1b
L2a
L2b
L3a
L3b
9a
501a
501b
502a
502b
90a
503a
503b
90b
91
71
31a
50
21
72
50
31b
73
93
32a
22
32b
33a
23
33b
9b
L1a=L1b=L2a=L2b=L3a=L3b

FIG. 13

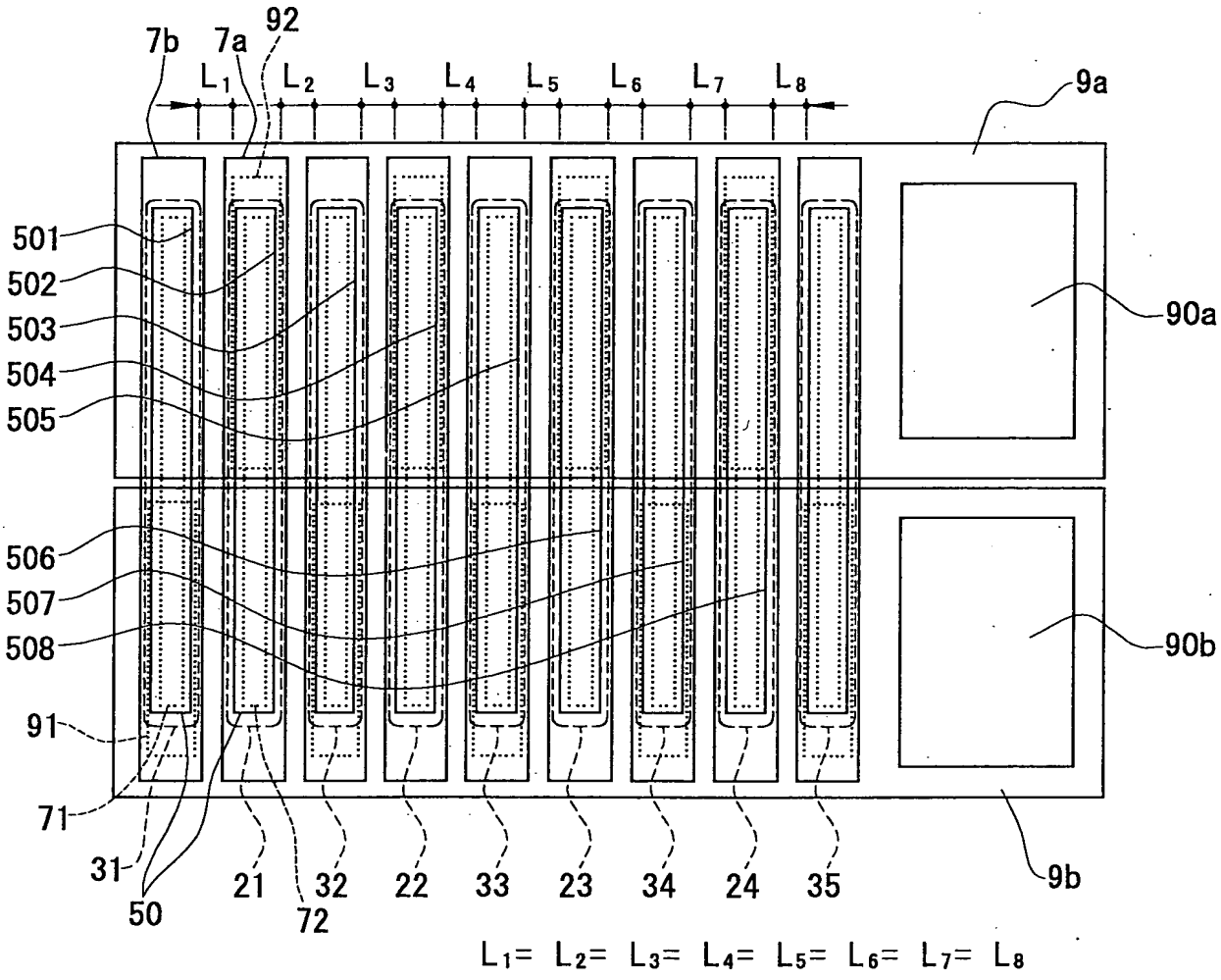
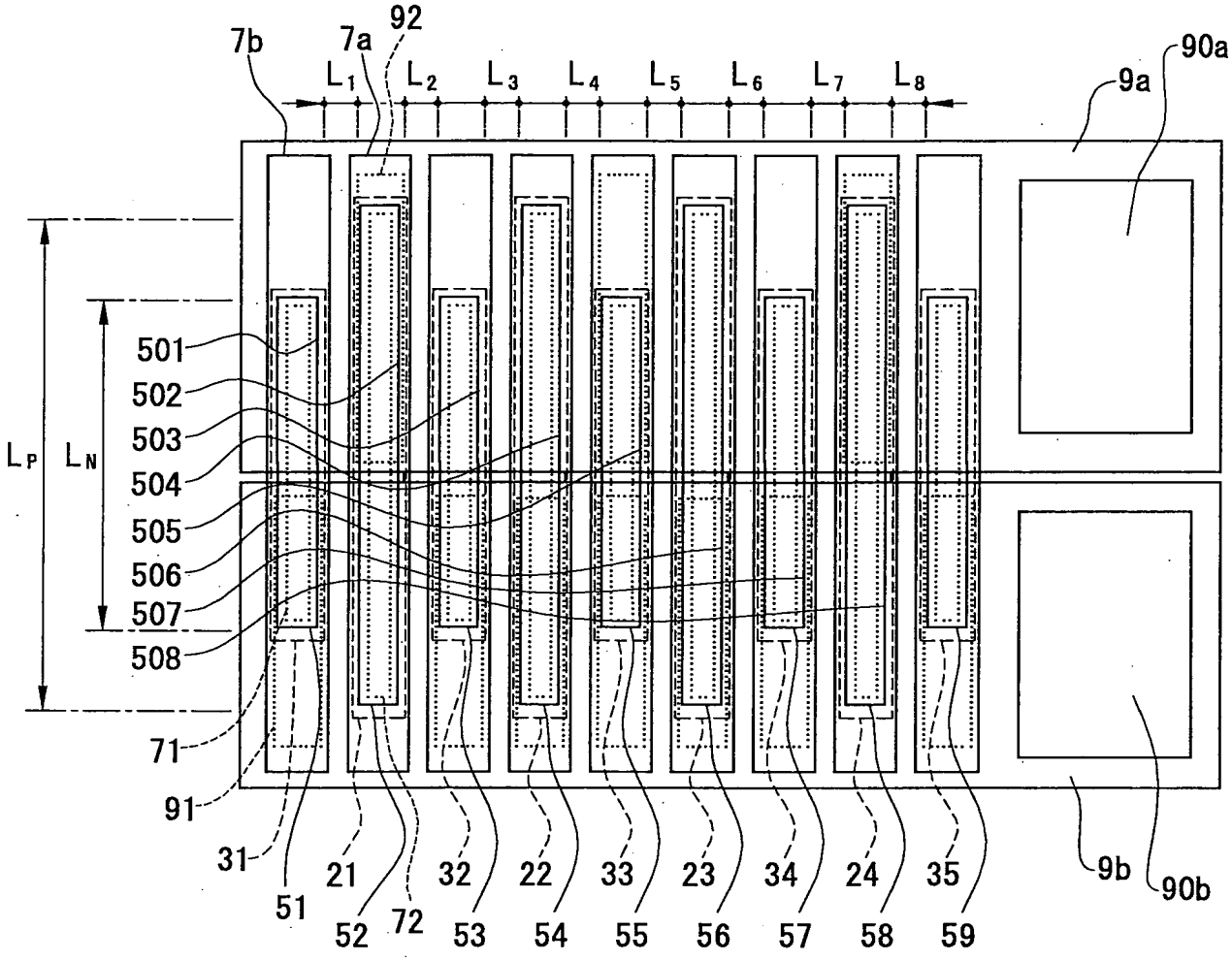

7b
7a
92
L1
L2
L3
L4
L5
L6
L7
L8
9a
501
502
503
504
505
90a
506
507
508
90b
91
71
31
50
21
72
32
22
33
23
34
24
35
9b
L1= L2= L3= L4= L5= L6= L7= L8

FIG. 14



$L_1 = L_2 = L_3 = L_4 = L_5 = L_6 = L_7 = L_8$ $L_P \neq L_N$

FIG. 15

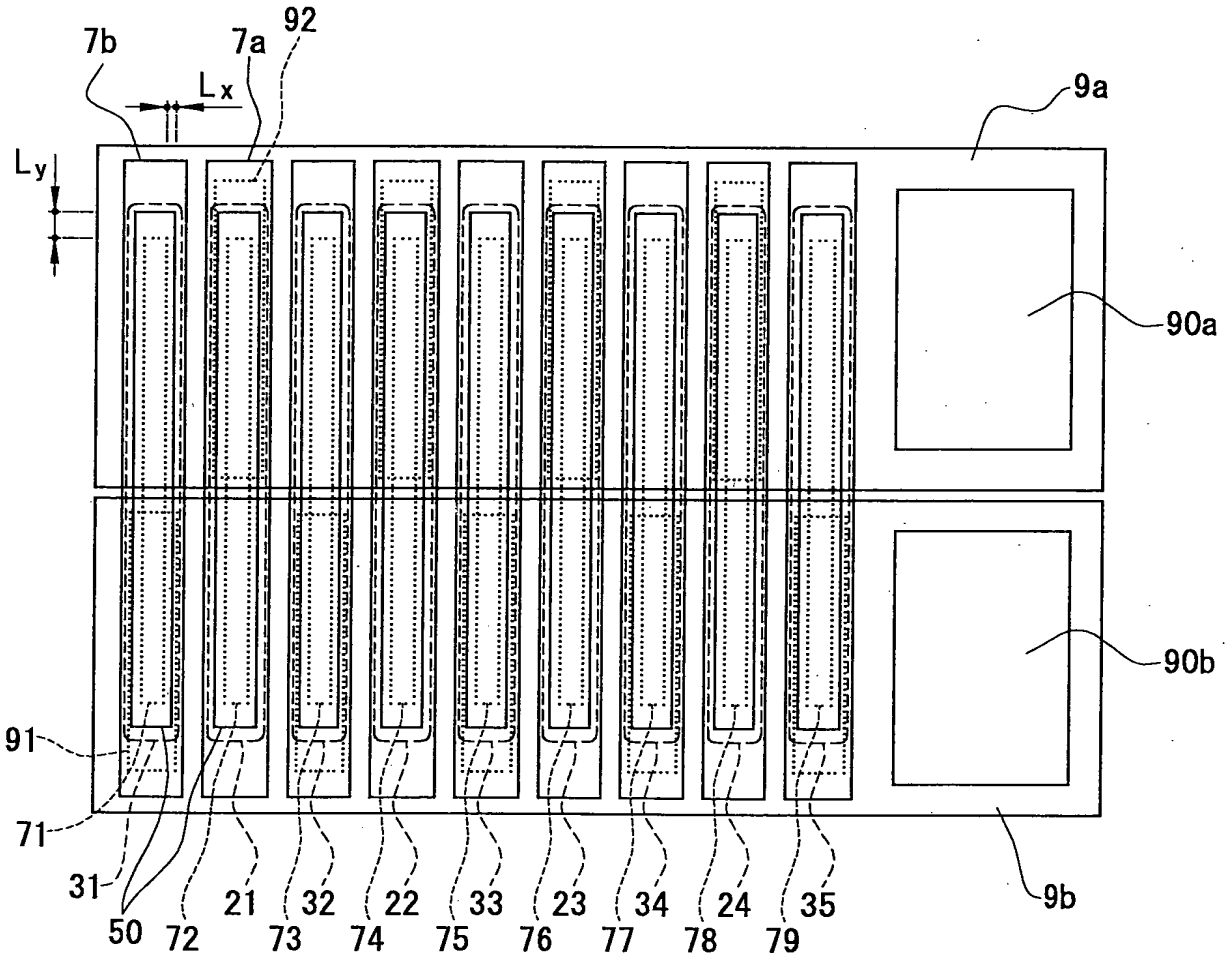
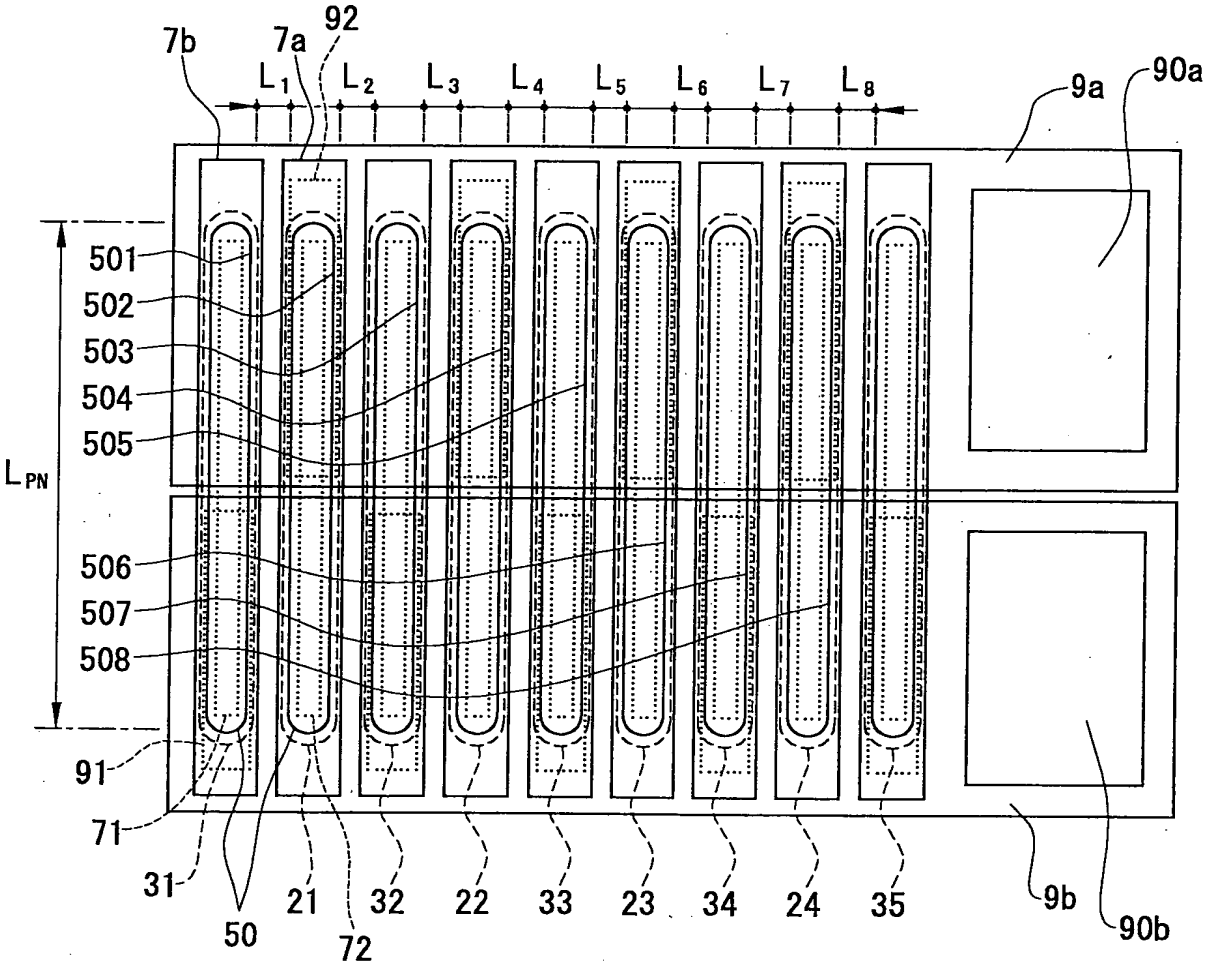

7b
7a
92
Lx
Ly
9a
90a
90b
91
71
31
50
72
21
73
32
74
22
75
33
76
23
77
34
78
24
79
35
9b

FIG. 16



$L_1 = L_2 = L_3 = L_4 = L_5 = L_6 = L_7 = L_8$

FIG. 17A

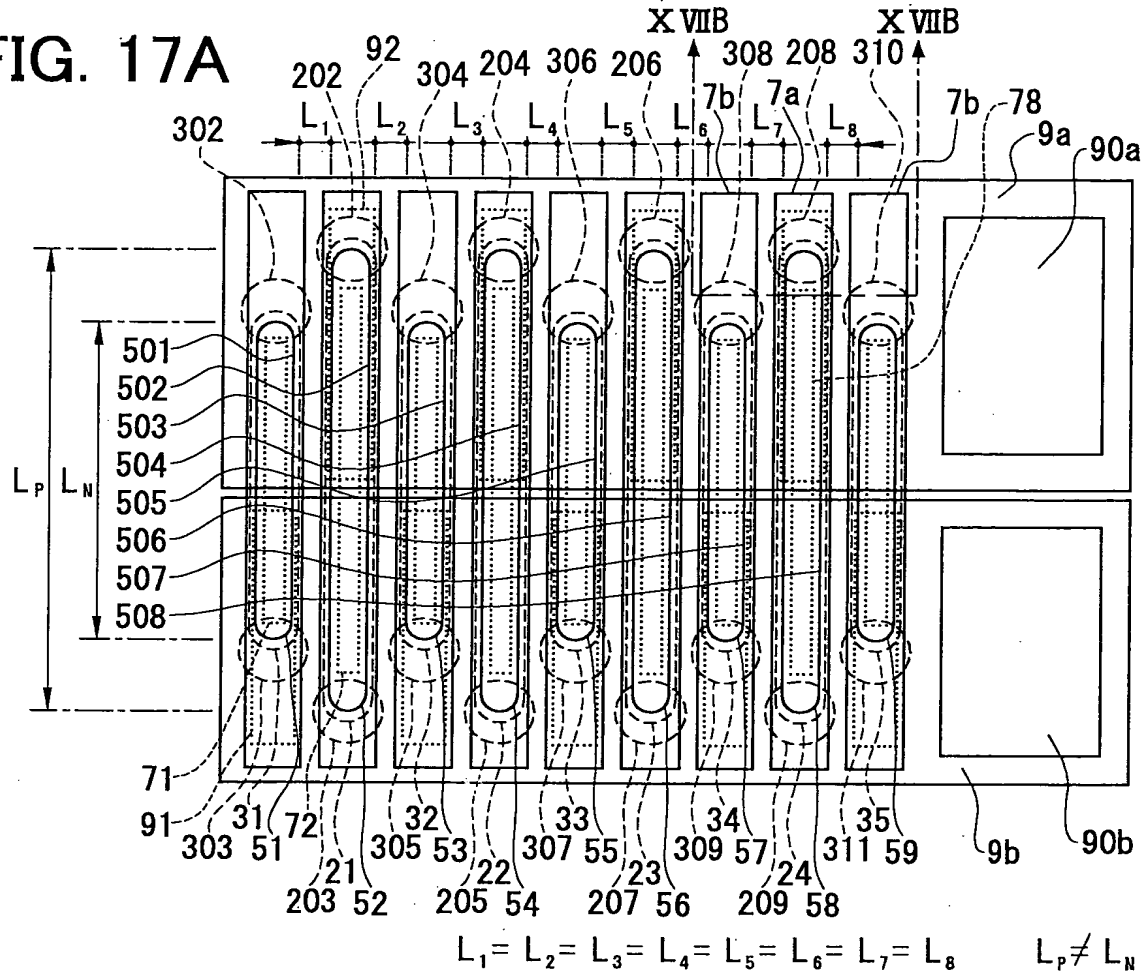


FIG. 17B

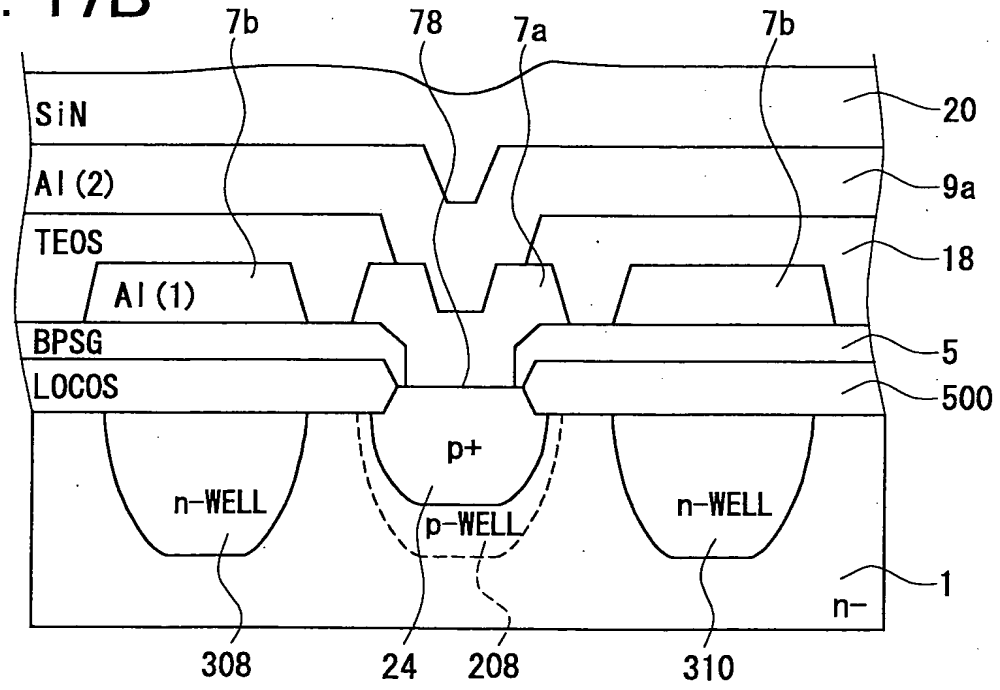


FIG. 18

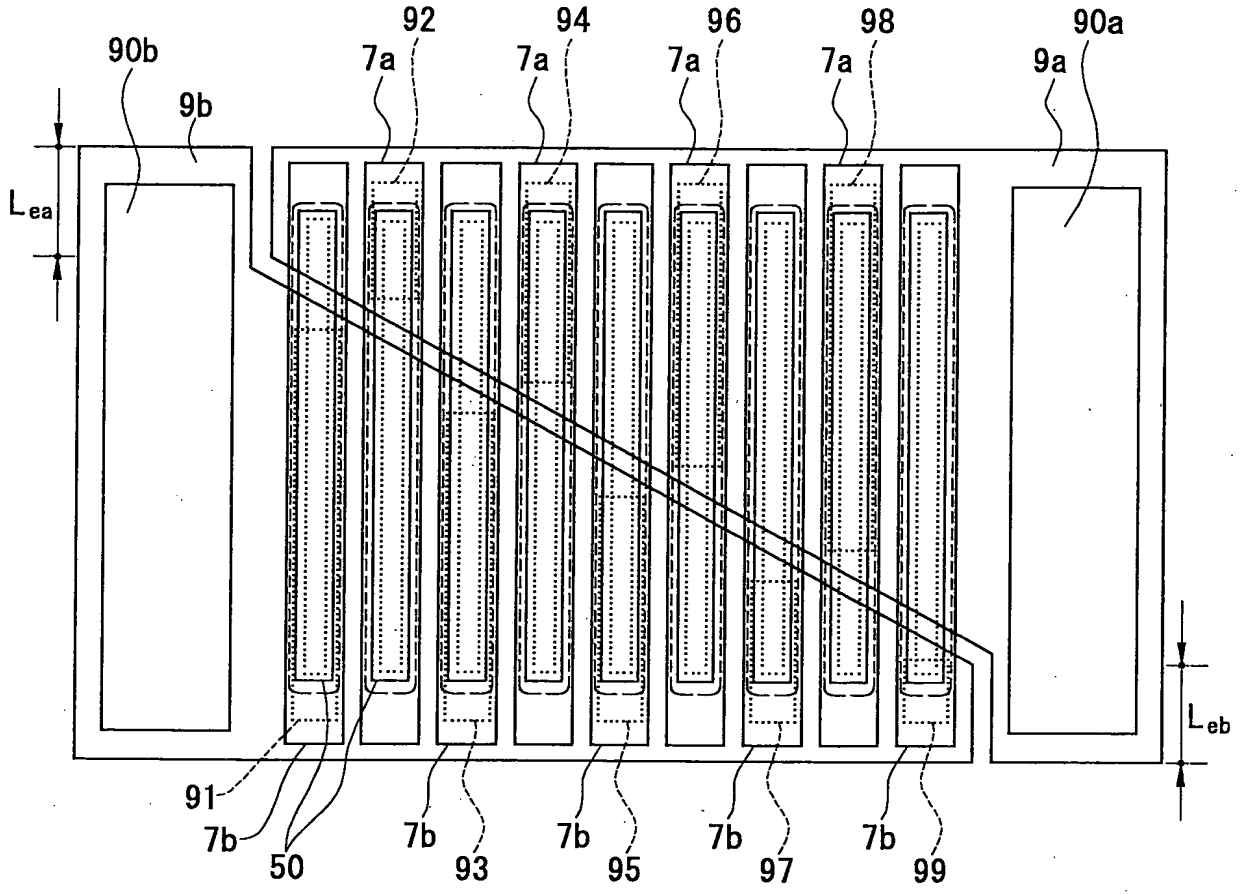

90b
9b
92
94
96
98
90a
7a
7a
7a
7a
9a
Lea
Leb
91
7b
50
7b
93
7b
95
7b
97
7b
99

FIG. 19A

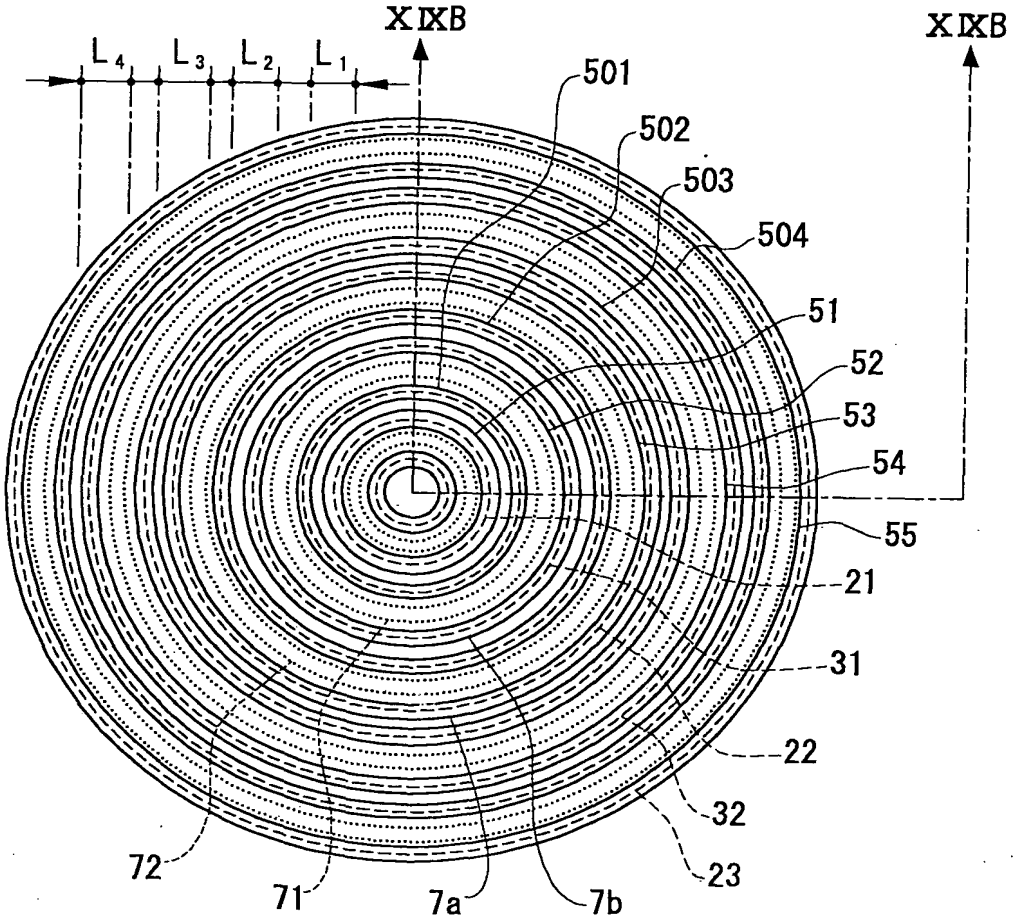


FIG. 19B

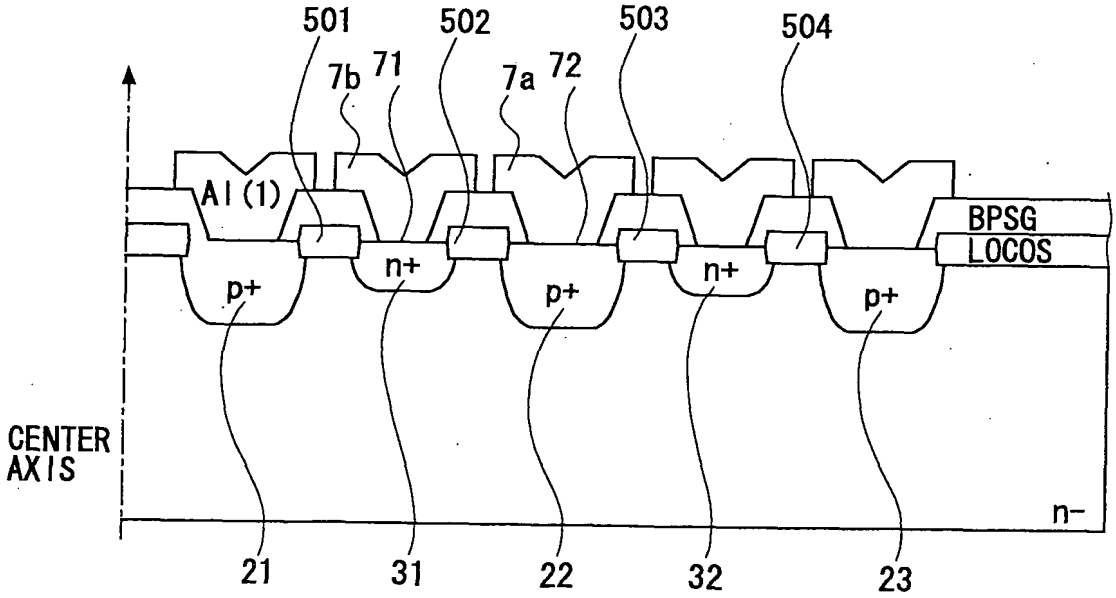


FIG. 20A

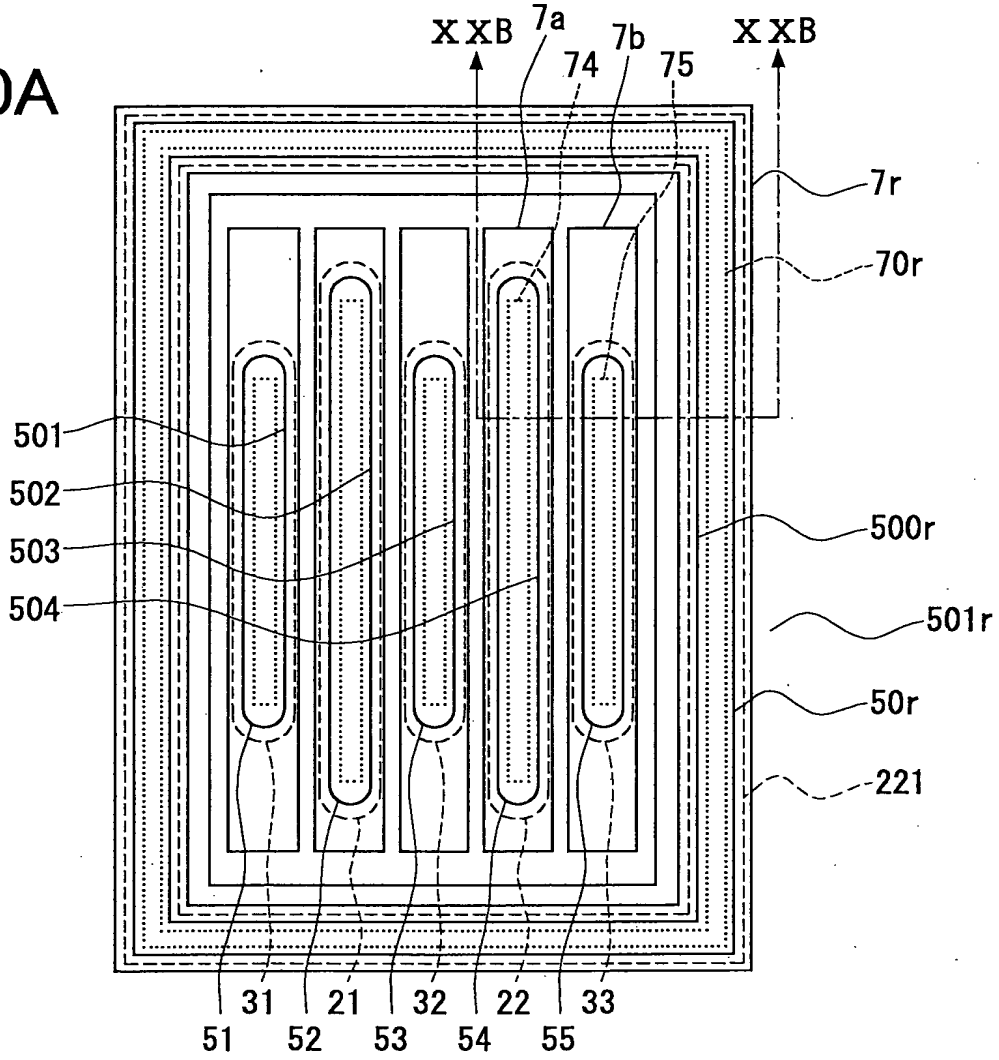


FIG. 20B

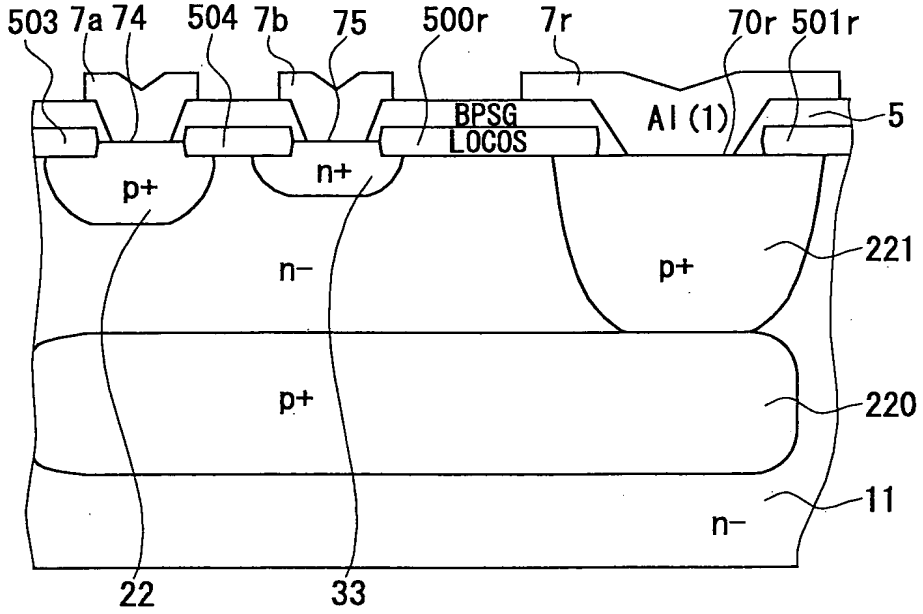


FIG. 21A

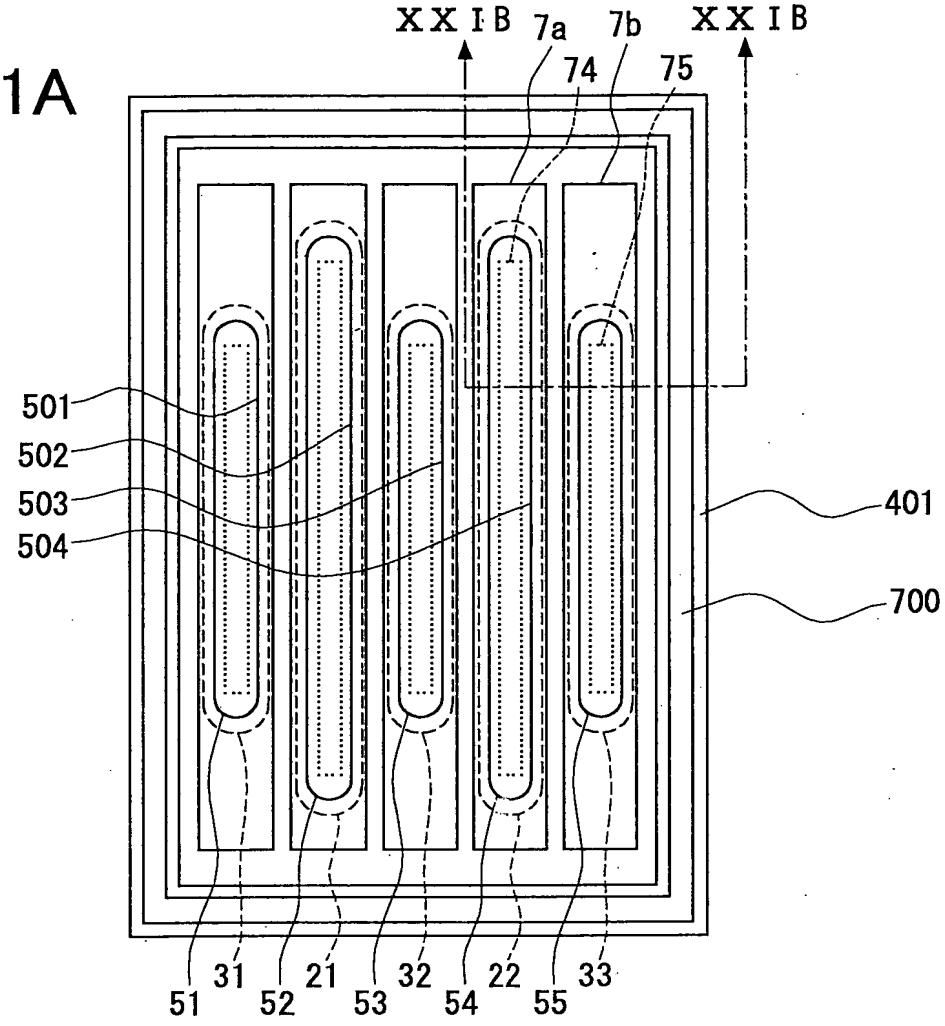


FIG. 21B

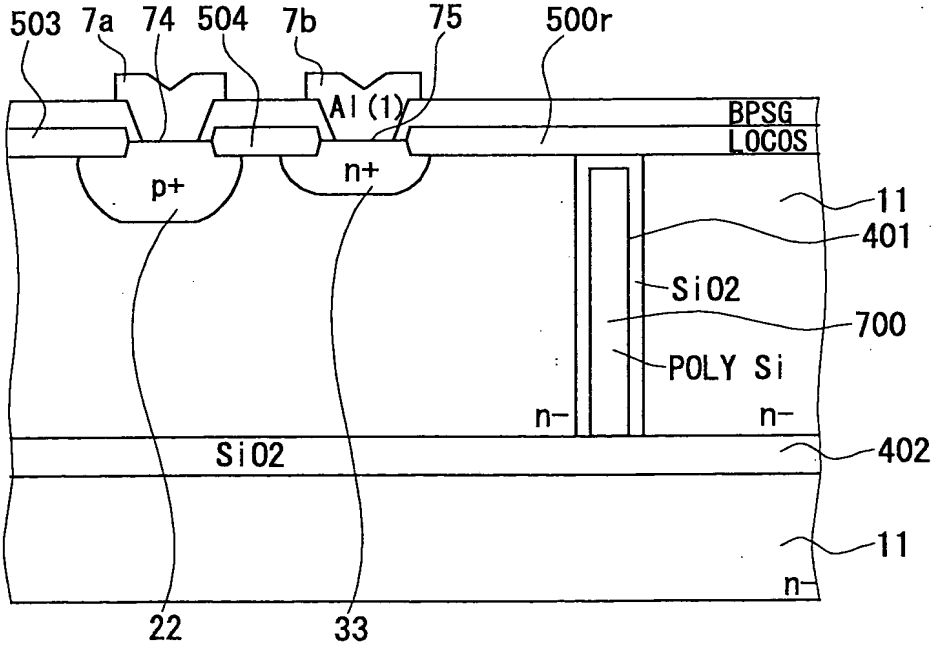


FIG. 22A
RELATED ART

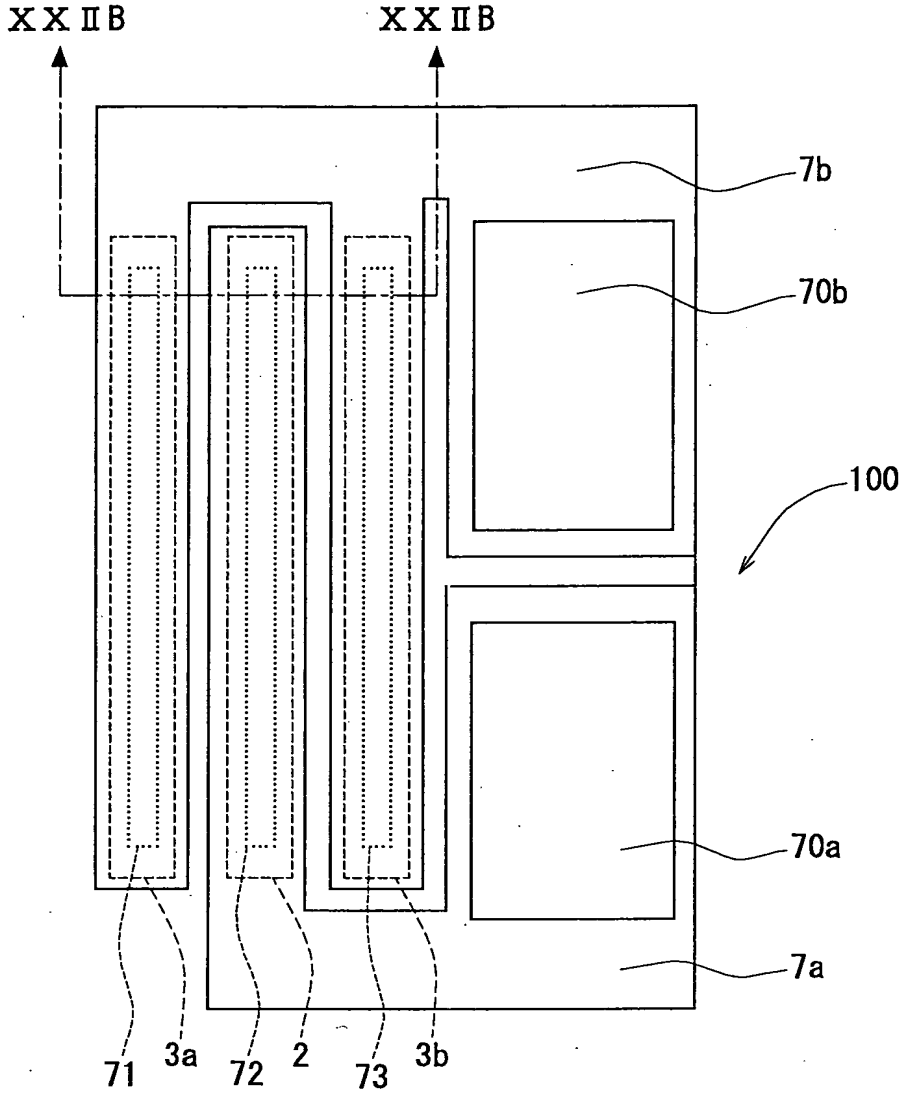


FIG. 22B
RELATED ART

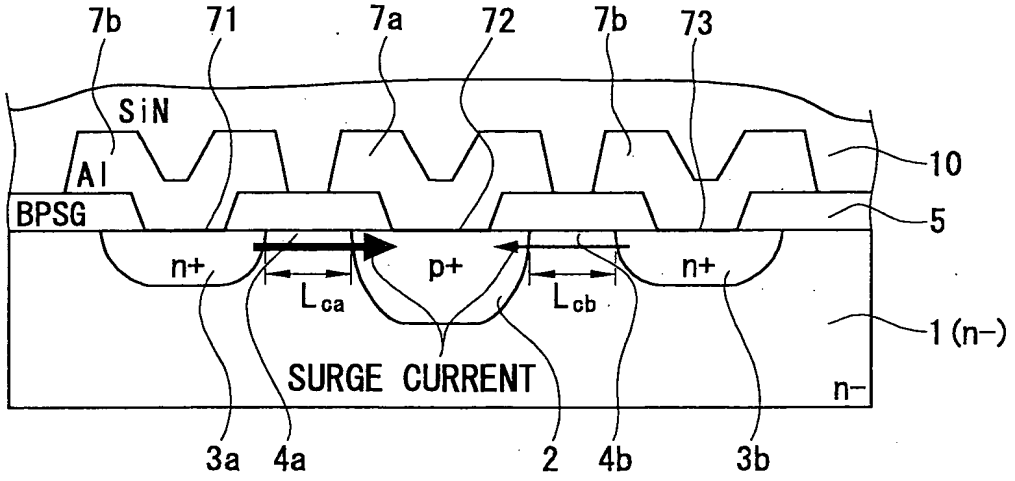


FIG. 23A
RELATED ART

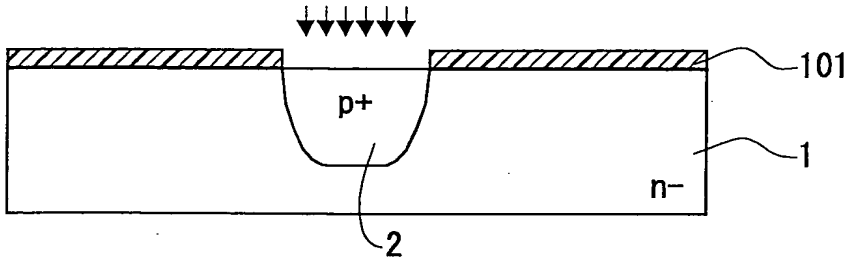


FIG. 23B
RELATED ART

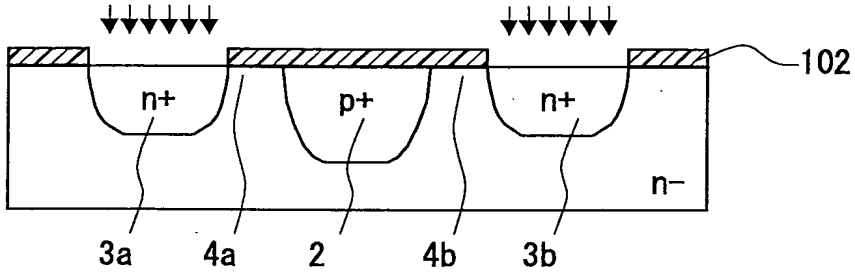


FIG. 23C
RELATED ART

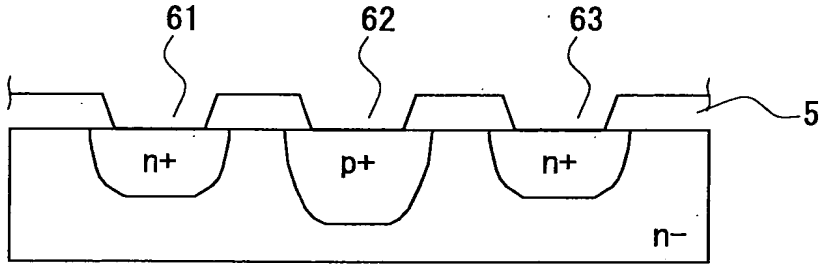


FIG. 23D
RELATED ART

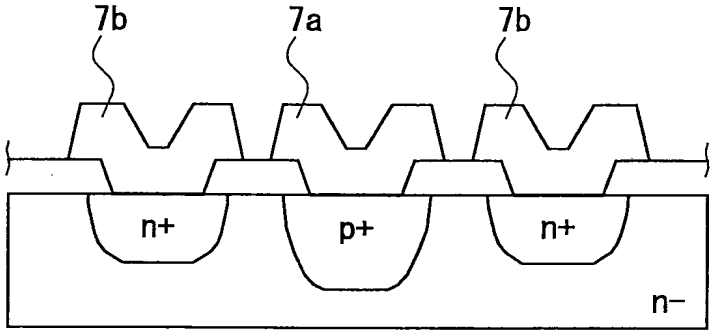


FIG. 23E
RELATED ART